



General

Guideline Title

Vestibular rehabilitation for peripheral vestibular hypofunction: an evidence-based clinical practice guideline.

Bibliographic Source(s)

Hall CD, Herdman SJ, Whitney SL, Cass SP, Clendaniel RA, Fife TD, Furman JM, Getchius TSD, Goebel JA, Shepard NT, Woodhouse SN. Vestibular rehabilitation for peripheral vestibular hypofunction: an evidence-based clinical practice guideline. J Neurol Phys Ther. 2016 Apr;40(2):124-55. [105 references] [PubMed](#)

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

The evidence quality (I-V) and recommendation strength (Strong, Moderate, Weak, Expert opinion) are defined at the end of the "Major Recommendations" field. In addition, each action statement is preceded by a letter grade (A-D) indicating the strength of the recommendation.

A. Action Statement 1: Effectiveness of Vestibular Rehabilitation in Persons with Acute and Subacute Unilateral Vestibular Hypofunction

Clinicians should offer vestibular rehabilitation to patients with acute or subacute unilateral vestibular hypofunction. (Evidence quality: I; recommendation strength: strong)

Action Statement Profile

Aggregate evidence quality: Level I. Based on 5 level I randomized controlled trials and 4 level II randomized controlled trials

Benefits: Improved outcomes in patients receiving vestibular rehabilitation when compared with controls given either no exercise or sham exercises

Risk, harm, and cost:

- Increased cost and time spent traveling associated with supervised vestibular rehabilitation
- Increase in symptom intensity at the onset of treatment

Benefit-harm assessment: Preponderance of benefit

Value judgments: Early initiation of vestibular rehabilitation ensures shorter episodes of care, higher levels of recovery of balance function,

reduced symptom complaints, improved functional recovery to activities of daily living, reduced fall risk, and improved quality of life.

Role of patient preferences: Cost and availability of patient time and transportation may play a role.

Exclusions:

- Individuals who have already compensated sufficiently to the vestibular loss and no longer experience symptoms or gait and balance impairments do not need formal vestibular rehabilitation. For example, people who resume their customary sporting or physical activities may compensate quickly so that they do not need vestibular rehabilitation and when evaluated by a physical therapist have normal test results.
- Possible exclusions also include active Meniere disease or those with impairment of cognitive or general mobility function that precludes adequate learning and carryover or otherwise impedes meaningful application of therapy.

A. Action Statement 2: Effectiveness of Vestibular Rehabilitation in Persons with Chronic Unilateral Vestibular Hypofunction

Clinicians should offer vestibular rehabilitation to patients with chronic unilateral vestibular hypofunction. (Evidence quality: I; recommendation strength: strong)

Action Statement Profile

Aggregate evidence quality: Level I. Based on 3 level I and 1 level II randomized controlled trials

Benefits: Improved outcomes in patients receiving vestibular rehabilitation when compared with controls given either no exercise or sham exercises

Risk, harm, and cost: Increased cost and time spent traveling associated with supervised vestibular rehabilitation

Benefit-harm assessment: Preponderance of benefit

Value judgments: Importance of optimizing and accelerating recovery of balance function and decreasing distress, improving functional recovery to activities of daily living, and reducing fall risk

Role of patient preferences: Cost and availability of patient time and transportation may play a role.

Exclusions:

- Individuals who have already compensated sufficiently to the vestibular loss and no longer experience symptoms or gait and balance impairments do not need formal vestibular rehabilitation.
- Possible additional exclusions include active Meniere disease or those with impairment of cognitive or general mobility function that precludes adequate learning and carryover or otherwise impedes meaningful application of therapy.

A. Action Statement 3: Effectiveness of Vestibular Rehabilitation in Persons with Bilateral Vestibular Hypofunction

Clinicians should offer vestibular rehabilitation to patients with bilateral vestibular hypofunction. (Evidence quality: I; recommendation strength: strong)

Action Statement Profile

Aggregate evidence quality: Level I. Based on 4 level I randomized controlled trials

Benefits: Improved function and decreased symptoms in patients receiving vestibular rehabilitation when compared with controls given sham exercises

Risk, harm, and cost:

- Increased symptom intensity and imbalance when performing the exercises
- Increased cost and time spent traveling associated with supervised vestibular rehabilitation

Benefit-harm assessment: Preponderance of benefit

Value judgments: Benefit of gaze stability and balance exercises in patients with bilateral vestibular hypofunction has been demonstrated in level I studies. However, the number of subjects in these studies was small (with the exception of one study) and the outcome measures utilized were variable.

Role of patient preferences: Cost and availability of patient time and transportation may play a role.

Exclusions: Possible exclusions include impairment of cognitive or general mobility function that precludes adequate learning and carryover or otherwise impedes meaningful application of therapy.

A. Action Statement 4: Effectiveness of Saccadic or Smooth-pursuit Exercises in Persons with Vestibular Hypofunction (Unilateral or Bilateral)

Clinicians should *not* offer saccadic or smooth-pursuit eye exercises in isolation (i.e., without head movement) as specific exercises for gaze stability to patients with unilateral or bilateral vestibular hypofunction. (Evidence quality: I; recommendation strength: strong)

Action Statement Profile

Aggregate evidence quality: Level I. Based on 3 level I randomized controlled trials

Benefits: Poorer outcomes in patients performing only saccadic or smooth-pursuit eye movements without head movement when compared with vestibular rehabilitation

Risk, harm, and cost:

- Smooth-pursuit and saccadic eye movement exercises do not appear to harm patients with unilateral or bilateral vestibular hypofunction.
- Delay in patients receiving an effective exercise program
- Increased cost and time spent traveling associated with ineffective supervised exercises

Benefit-harm assessment: Preponderance of harm

Value judgments: Importance of prescribing an effective exercise program rather than exercises that will not improve gaze stability, symptom complaint, or balance while walking

Role of patient preferences: It is doubtful that patients would choose to perform an ineffective exercise.

Exclusions: None

B. Action Statement 5: Effectiveness of Different Types of Exercises in Persons with Acute or Chronic Unilateral Vestibular Hypofunction

Clinicians may provide targeted exercise techniques to accomplish specific goals appropriate to address identified impairments and functional limitations. (Evidence quality: II; recommendation strength: moderate)

Action Statement Profile

Aggregate evidence quality: Level II. Based on 1 level I and 2 level II randomized controlled trials examining whether one type of vestibular exercise is more beneficial than another. In addition, 2 level II studies compared a traditional vestibular exercise with a novel exercise.

Benefits: Unknown

Risk, harm, and cost: Increased cost and time spent traveling associated with supervised vestibular rehabilitation

Value judgments: Importance of identifying the most appropriate exercise approach to optimize and accelerate recovery of balance function and decreasing distress, improving functional recovery to activities of daily living, and reducing fall risk

Role of patient preferences: Cost and availability of patient time and transportation may play a role.

Exclusions: Possible exclusions include active Meniere disease or those with impairment of cognitive or general mobility function that precludes adequate learning and carryover or otherwise impedes meaningful application of therapy.

B. Action Statement 6: Effectiveness of Supervised Vestibular Rehabilitation

Clinicians may offer supervised vestibular physical therapy in patients with unilateral or bilateral peripheral vestibular hypofunction. (Evidence quality: I-III; recommendation strength: moderate)

Action Statement Profile

Aggregate evidence quality: Level II. Based on numerous level I, II, and III studies

Benefits: Possibly better adherence with a supervised exercise program

Risk, harm, and cost:

- There is an increased cost and time spent traveling associated with supervised vestibular rehabilitation.
- Without feedback from the supervising physical therapist, the patient may under- or overcomply with the exercise prescription resulting in either lack of progress/improvement or increased symptoms potentially leading to stopping therapy.

Benefit-harm assessment:

- Preponderance of benefit for supervision
- Evidence suggests that patients drop out at higher rates when unsupervised.

Value judgments:

- Supervised vestibular rehabilitation appears to promote adherence and continued performance of vestibular exercises, which may lead to improved outcomes.
- Persons with impairment of cognition or moderate-severe mobility dysfunction may need supervision to benefit from vestibular rehabilitation.
- People who are fearful of falling may not do well in an unaided program.

Role of patient preferences: Cost and availability of patient time and transportation may play a role.

Exclusions: Patients who live at a distance may not be able to participate in supervised vestibular rehabilitation.

D. Action Statement 7: Optimal Exercise Dose of Treatment in People with Peripheral Vestibular Hypofunction (Unilateral or Bilateral)

Clinicians may prescribe a home exercise program of gaze stability exercises consisting of a minimum of 3 times per day for a total of at least 12 minutes per day for patients with acute/subacute vestibular hypofunction and at least 20 minutes per day for patients with chronic vestibular hypofunction. (Evidence quality: V; recommendation strength: expert opinion)

Action Statement Profile

Aggregate evidence quality: Level V. Based on lack of direct evidence on exercise dose. Best practice based on the clinical experience of the guideline development team and guided by the evidence.

Benefit: Improved outcomes with appropriate exercise dose

Risk, harm, and cost:

- Risk of provoking temporary dizziness during and after performance of exercises
- Risk of increased nausea and possible emesis when exercises are performed during the most acute stage
- Some physicians may want to delay exercises during the early postoperative stage in some patients because of risk of bleeding or cerebrospinal fluid leak.
- Increased cost and time spent traveling associated with supervised vestibular rehabilitation

Benefit-harm assessment: Preponderance of benefit over harm

Value judgments: Benefit of gaze stability exercises in patients with unilateral vestibular hypofunction has been demonstrated in numerous level I and level II studies; however, the frequency and intensity of the exercises is based on extrapolation from research studies rather than based on direct evidence.

Role of patient preferences: Minimal

Exclusions: Patients at risk for bleeding or cerebrospinal fluid leak

D. Action Statement 8: Decision Rules for Stopping Vestibular Rehabilitation in Persons with Peripheral Vestibular Hypofunction (Unilateral or Bilateral)

Clinicians may use achievement of primary goals, resolution of symptoms, or plateau in progress as reasons for stopping therapy. (Evidence quality: V; recommendation strength: expert opinion)

Action Statement Profile

Aggregate evidence quality: Level V. Based on extrapolation from methodology and results in 69 studies, it may be advisable to consider the

following in the decision to stop treatment:

1. Goals are met, a plateau has been reached, or the patient is no longer symptomatic.
2. Nonadherence/patient choice
3. Deterioration of clinical status or a prolonged increase in symptoms
4. Fluctuating/unstable vestibular conditions (e.g., Meniere) and comorbid musculoskeletal, neurologic, cardiac, visual, cognitive, psychological, or disability-related conditions affecting ability to participate
5. Overall length of treatment

Benefits: More efficient management of treatment duration, avoiding cessation of treatment before optimal recovery is achieved, or continuing treatment for unreasonably protracted periods

Risk, harm, and cost:

- Prematurely stopping treatment before maximum gains are achieved
- Protracted treatment is costly to the payer, the patient, and the clinician who are not seeing documented improvement, and to other patients who are waiting to receive treatment.

Benefit-harm assessment: Preponderance of benefit over harm

Value judgments: No concrete stopping rules have been explored in the research; however, numerous level I through IV studies provide comments and findings that can assist in the decision-making process.

Role of patient preferences: It is the patient's decision whether or not to participate in vestibular rehabilitation and when to stop vestibular rehabilitation.

Patient exclusions:

- Patients with impaired cognition or moderate to severe mobility dysfunction may need a greater number of treatment sessions, so using the treatment duration based on research (which typically excludes these patients) may not be appropriate.
- Patients with moderate to severe motion sensitivity may also benefit from a greater number of treatment sessions.
- In a level II study, patients taking vestibular-suppressant medication required additional treatment sessions (11 weeks versus 9 weeks before plateau).

C. Action Statement 9: Factors That Modify Rehabilitation Outcomes

Clinicians may evaluate factors that could modify rehabilitation outcomes. (Evidence quality: I-III; recommendation strength: weak to strong)

Action Statement Profile

Aggregate evidence quality: Age: Level I. Based on 4 level I randomized controlled trials and 2 level II quasiexperimental studies. Sex: Level III. Based on 1 level II and 2 level III studies. Time from onset: Level III. Based on 1 level I randomized controlled trial and 3 level III studies, 1 with contradictory results to the others. Comorbidities: Level III. Based on 1 level I randomized controlled trial, 2 level II and 1 level III studies. Use of vestibular-suppressant medications: Level III. Based on 1 level II and 1 level III studies.

Benefits: Older patients obtain similar benefits from vestibular rehabilitation.

Risk, harm, and cost: Peripheral neuropathy may increase risk of falling and negatively impact rehabilitation outcomes.

Benefit-harm assessment: Vestibular rehabilitation has been shown to improve outcomes regardless of the time from onset; however, the potential harm (decreased quality of life, falls) to initiating rehabilitation later warrants initiating rehabilitation as soon as possible.

Value judgments: Little evidence is available to make decisions about how to consider factors that may affect outcomes.

Role of patient preferences: Cost and availability of patient time and transportation may play a role, especially with older patients who may have transportation issues.

Exclusions: None

A. Action Statement 10: The Harm/Benefit Ratio for Vestibular Rehabilitation in Terms of Quality of Life/Psychological Stress

Clinicians should offer vestibular rehabilitation to persons with peripheral vestibular hypofunction. (Evidence quality: I-III; recommendation

strength: strong)

Action Statement Profile

Aggregate evidence quality: Level I-III. Based on randomized trials and descriptive studies. No targeted randomized trials are available to directly answer the question to the harm/benefit ratio of vestibular rehabilitation for persons with vestibular hypofunction; however, quality of life measures have been used as primary outcome measures in a number of studies.

Benefits: There are improved quality of life and psychological outcomes in persons undergoing vestibular rehabilitation when compared with controls who receive sham or no exercise interventions.

Risk, harm, and cost:

- Neck pain, motion sickness, and nausea have been reported as side effects of rehabilitation and these can affect quality of life.
- Dizziness as a side effect of the exercises could increase psychological distress in some patients.

Benefit-harm assessment: Preponderance of benefit, although not all patients improve with vestibular rehabilitation.

Value judgments: There is sufficient evidence of improved quality of life and reduced psychological distress with vestibular rehabilitation.

Role of patient preferences: Cost and availability of patient time, location of the vestibular rehabilitation clinic, and transportation may play a role.

Exclusions: None

Definitions

Level of Evidence

Level	Criteria
I	Evidence obtained from high-quality ($\geq 50\%$ critical appraisal score) diagnostic studies, prospective studies, or randomized controlled trials
II	Evidence obtained from lesser-quality ($< 50\%$ critical appraisal score) diagnostic studies, prospective studies, or randomized controlled trials
III	Case-controlled studies or retrospective studies
IV	Case studies and case series
V	Expert opinion

Based on information from the Centre for Evidence Based Medicine Web site: <http://www.cebm.net/oxford-centre-evidence-based-medicine-levels-evidence-march-2009/>

Grades of Recommendation

Grade	Recommendation	Strength of Recommendation
A	Strong evidence	A preponderance of level I and/or level II studies supports the recommendation. This must include at least 1 level I study.
B	Moderate evidence	A single high-quality randomized controlled trial or a preponderance of level II evidence supports the recommendation.
C	Weak evidence	A single level II study or a preponderance of level III and IV studies supports the recommendation.
D	Expert opinion	Best practice based on the clinical experience of the guideline development team and guided by the evidence, which may be conflicting. Where higher quality studies disagree with respect to their conclusions, it may be possible to come to agreement on certain aspects of intervention (e.g., variations in treatment/diagnostic test, population, or setting that may account for conflict).

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Peripheral vestibular hypofunction

Guideline Category

Management

Rehabilitation

Clinical Specialty

Family Practice

Internal Medicine

Neurology

Otolaryngology

Physical Medicine and Rehabilitation

Intended Users

Advanced Practice Nurses

Health Care Providers

Nurses

Occupational Therapists

Physical Therapists

Physician Assistants

Physicians

Guideline Objective(s)

- To assist physical therapists with the treatment of persons with peripheral vestibular hypofunction to optimize rehabilitation outcomes
- To describe the evidence supporting vestibular rehabilitation including interventions and discharge planning supported by current best evidence
- To identify areas of research that are needed to improve the evidence base for clinical management of peripheral vestibular hypofunction
- To answer the question of whether vestibular exercises are effective at enhancing recovery of function in people with peripheral vestibular hypofunction
- To systematically assess the peer-reviewed literature and make recommendations on the basis of the quality of the research for the treatment of peripheral vestibular hypofunction
- To provide recommendations to reduce unwarranted variation in care and to ensure that exercise interventions provided by physical therapists and other clinicians for vestibular hypofunction are consistent with current best practice

Target Population

Interventions and Practices Considered

1. Vestibular rehabilitation
 - Targeted exercise techniques
 - Supervised vestibular physical therapy
 - Home exercise program of gaze stability exercises
2. Using achievement of primary goals, resolution of symptoms, or plateau in progress to stop therapy
3. Evaluating factors that could modify rehabilitation outcomes

Note: Saccadic or smooth-pursuit eye exercises in isolation (i.e., without head movement) as specific exercises for gaze-stability to patients with unilateral or bilateral vestibular hypofunction is not recommended.

Major Outcomes Considered

- Visual acuity
- Gaze stabilization
- Postural stability
- Intensity of visual vertigo
- Motion-provoked dizziness
- Symptoms of balance disorder and somatic anxiety
- Functional lower extremity strength
- Walking at preferred speed
- Balance control
- Mobility and fall risk
- Severity, frequency, and fear of dizziness
- Compliance
- Quality of life

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Literature Search

A systematic review of the literature was performed by the academic librarians from East Tennessee State University, Emory University, and the University of Pittsburgh in collaboration with the workgroup. The original search included the following 4 databases: PubMed, EMBASE, Web of Science, and Cochrane Library. The subsequent search included the following 4 databases: PubMed, CINAHL, EMBASE, and Cochrane Library. The original PICO (patient, intervention, comparators, outcome) question was framed as "Is exercise effective at enhancing recovery of function in people with peripheral vestibular hypofunction?" The search query in PubMed, CINAHL, EMBASE, and Web of Science combined terms from the concept sets of patient population (peripheral vestibular hypofunction), intervention (exercise), and outcomes (based on the International Classification of Functioning, Disability and Health model) to retrieve all article records that include at least 1 term from each set (see Table 3 in the original guideline document). The search query for the Cochrane Library included vertigo *or* vestibular *and* exercise.

In addition, Web sites of agencies and organizations that produce guidelines and/or systematic reviews on clinical medicine were searched for relevant publications. These included (1) Canada, Health Evidence; (2) UK, National Institute for Health and Care Excellence; (3) United States,

Agency for Healthcare Research and Quality; (4) National Guidelines Clearinghouse; and (5) ClinicalTrials.gov. The government agencies and Web sites produced only duplicates that were removed.

The study types included were meta-analyses, systematic reviews, randomized controlled trials, cohort studies, case control studies, and case series/studies. Inclusion criteria for articles included human subjects, published in English, and published after 1985. Exclusion criteria included superior canal dehiscence, blindness, primary diagnosis of benign paroxysmal positional vertigo, migraine, central vestibular disorder, or central nervous system pathology (Parkinson disease, multiple sclerosis, stroke, cerebellar ataxia).

The initial systematic search was performed in March 2013 and 1540 potential articles were identified (see Figure 1A in the original guideline document). Identification of relevant studies involved a 3-step process: (1) a title/abstract review during which obviously irrelevant articles were removed; (2) a full-text article review using the inclusion/exclusion criteria; and (3) review article reference lists searched for relevant, missed articles. After duplicates were removed ($n = 778$), 762 article titles and abstracts were each reviewed by 2 of the 3 members of the workgroup to exclude obviously irrelevant ones. In the case of disagreement, the third member reviewed the article title and abstract to arbitrate. On the basis of the title and abstract, 13 articles were excluded because of language (not English) and 567 were excluded because of irrelevance to the topic; thus, 182 full-text articles were reviewed. In addition, review article reference lists were searched for relevant, missed articles by a graduate assistant and 13 additional articles were identified. Each full-text article was examined by 2 reviewers from the workgroup and Advisory Board using the inclusion/exclusion criteria. On the basis of the full-text article, 121 articles were identified as relevant to the clinical practice guideline (CPG).

A follow-up literature search following the same strategy was performed in February of 2015, and 573 articles were identified (see Figure 1B in the original guideline document). After duplicates were removed ($n = 34$), 539 article titles and abstracts were each reviewed by 2 members of the workgroup to exclude obviously irrelevant articles. On the basis of the title and abstract, 16 articles were excluded because of language (not English) and 499 were excluded because of irrelevance to the topic; thus, 24 full-text articles were reviewed. On the basis of the full-text article, 14 articles were identified as relevant to the CPG.

Number of Source Documents

Initial literature search: 121 articles.

Follow-up literature search: 14 articles.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Level of Evidence

Level	Criteria
I	Evidence obtained from high-quality ($\geq 50\%$ critical appraisal score) diagnostic studies, prospective studies, or randomized controlled trials
II	Evidence obtained from lesser-quality ($< 50\%$ critical appraisal score) diagnostic studies, prospective studies, or randomized controlled trials
III	Case-controlled studies or retrospective studies
IV	Case studies and case series
V	Expert opinion

Based on information from the Centre for Evidence Based Medicine Web site: <http://www.cebm.net/oxford-centre-evidence-based-medicine-levels-evidence-march-2009/>

Methods Used to Analyze the Evidence

Description of the Methods Used to Analyze the Evidence

Critical Appraisal Process

Each intervention article was critically appraised using an electronic appraisal form based on key questions adapted from Fetters and Tilson (Fetters L, Tilson J. Evidence Based Physical Therapy. FA Davis; 2012). Critical appraisal scores based on these key questions regarding methodological rigor of the research design, study execution, and reporting have also been used by other groups in the development of clinical practice guidelines. Levels of evidence were determined using criteria from the Centre for Evidence-Based Medicine for intervention studies (see "Rating Scheme for the Strength of the Evidence" field), with the additional criteria that levels I and II are differentiated based on the critical appraisal score. Level I studies received a critical appraisal score of at least 50% and level II studies received critical appraisal scores less than 50%.

Volunteers were recruited from the Neurology Section and Vestibular Special Interest Group using an online "Call for Volunteers" to provide critical appraisals of the articles identified as being relevant to this clinical practice guideline. Two face-to-face training sessions (4 hours at the American Physical Therapy Association [APTA] Combined Section Meeting in 2013 and 2 hours at the Combined Section Meeting in 2014) were provided by the workgroup to the volunteers before performance of any critical appraisals. Selected intervention articles were critically appraised by the workgroup to establish the test standards. Volunteers performed 2 practice critical appraisals and were compared with scoring of the workgroup. Volunteers were considered to be qualified to review with 80% or more agreement with the workgroup. Critical appraisals and study characteristics extractions from each article were performed by 2 reviewers and the information entered into an electronic data extraction form. Discrepancies in scoring were discussed and resolved by the 2 reviewers. In situations that a score could not be agreed upon, the disagreement was resolved by consensus among the workgroup.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The vestibular guideline workgroup proposed the topic to the American Physical Therapy Association (APTA) and Neurology Section. The topic was accepted and the workgroup attended the APTA Workshop on Developing Clinical Practice Guidelines in July 2012. The workgroup submitted and received 3-year grant funding from the APTA to support guideline development in October 2012. The workgroup solicited members to form an expert multidisciplinary (audiology, neurology, otolaryngology, patient representative, and physical therapy) Advisory Board of people who are actively involved in the management of patients with vestibular dysfunction. The first Advisory Board call took place in January 2013, and 5 subsequent conference calls occurred over the following 2 and a half years. The Advisory Board was intimately involved in the development of the content and scope of the guideline with key questions to be answered, determination of articles for inclusion, and writing/critical edits of the clinical practice guideline.

Rating Scheme for the Strength of the Recommendations

Grades of Recommendation

Grade	Recommendation	Strength of Recommendation
A	Strong evidence	A preponderance of level I and/or level II studies supports the recommendation. This must include at least 1 level I study.
B	Moderate evidence	A single high-quality randomized controlled trial or a preponderance of level II evidence supports the recommendation.
C	Weak evidence	A single level II study or a preponderance of level III and IV studies supports the recommendation.
D	Expert opinion	Best practice based on the clinical experience of the guideline development team and guided by the evidence,

Grade	Recommendation	Strength of Recommendation
		which may be conflicting. Where higher quality studies disagree with respect to their conclusions, it may be possible to come to agreement on certain aspects of intervention (e.g., variations in treatment/diagnostic test, population, or setting that may account for

Cost Analysis

The guideline developers reviewed a published cost analysis.

Method of Guideline Validation

External Peer Review

Description of Method of Guideline Validation

External Review Process by Stakeholders

Comments were solicited from the Practice Committee for the Neurology Section of the American Physical Therapy Association (APTA) and the public via email blasts to professional organizations (audiology, neurology, otolaryngology, and physical therapy) as well as postings on the Neurology Section and Vestibular Special Interest Group Web sites at 2 critical junctures during the guideline development. The first call for public comments on the Project Development Plan (the outline of the guideline authors, clinical questions to be answered, terms and databases to be searched, and project timeline) occurred in October 2013. The second call for comments on the complete draft of the clinical practice guideline occurred in April 2015. The second call included solicitation for feedback via email blasts to professional organizations as occurred with the first call. In addition, the second call included solicitation for feedback from consumers via postings on the Vestibular Disorders Association (VEDA) Web site, Facebook page, and email blast to all VEDA members. Applicable comments have been incorporated into the final version of the guideline.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Therapeutic exercise interventions to address the signs, symptoms, and functional limitations secondary to vestibular deficits have been shown to decrease dizziness, improve postural stability thus reducing fall risk, and improve visual acuity during head movement in individuals with vestibular hypofunction.
- A newly-revised Cochrane Database Systematic Review published in 2015 concluded that there is moderate to strong evidence in support of vestibular rehabilitation in the management of patients with unilateral vestibular hypofunction, specifically for reducing symptoms and improving function.
- It is hoped that this clinical practice guideline (CPG) will be helpful in developing collaborative relationships among health care providers and thus will serve to reduce unnecessary delays (>1 year in some cases) in referring appropriate patients with vestibular hypofunction for vestibular rehabilitation.

See the "Risk, harm, and cost" sections in the "Action Statement Profile" (see the "Major Recommendation" field) for specific benefits from each Action Statement.

Potential Harms

- Without feedback from the supervising physical therapist, the patient may under- or overcomply with the exercise prescription resulting in either lack of progress/improvement or increased symptoms potentially leading to stopping therapy.
- Neck pain, motion sickness, and nausea have been reported as side effects of rehabilitation and can affect quality of life.
- Dizziness as a side effect of the exercises could increase psychological distress in some patients.

See the "Risk, harm, and cost" sections in the "Action Statement Profile" (see the "Major Recommendation" field) for specific harms from each Action Statement.

Contraindications

Contraindications

- Possible exclusions to vestibular rehabilitation include active Meniere disease or patients with impairment of cognitive or general mobility function that precludes adequate learning and carryover or otherwise impedes meaningful application of therapy.
- Patients who are at risk for bleeding of cerebrospinal fluid leak are an exclusion for home gaze stability exercise programs.

Qualifying Statements

Qualifying Statements

This guideline is intended for clinicians, family members, educators, researchers, policy makers, and payers. It is not intended to be construed or to serve as a legal standard of care. As rehabilitation knowledge expands, clinical guidelines are promoted as syntheses of current research and provisional proposals of recommended actions under specific conditions. Standards of care are determined on the basis of all clinical data available for an individual patient/client and are subject to change as knowledge and technology advance, patterns of care evolve, and patient/family values are integrated. This clinical practice guideline is a summary of practice recommendations that are supported with current published literature that has been reviewed by expert practitioners and other stakeholders. These parameters of practice should be considered guidelines only, not mandates. Adherence to them will not ensure a successful outcome in every patient, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate decision regarding a particular clinical procedure or treatment plan must be made using the clinical data presented by the patient/client/family, the diagnostic and treatment options available, the patient's values, expectations, and preferences, and the clinician's scope of practice and expertise. However, it is suggested that significant departures from accepted guidelines should be documented in patient records at the time the relevant clinical decisions are made.

Implementation of the Guideline

Description of Implementation Strategy

The following strategies are provided as suggestions for clinicians to implement the action statements of this clinical practice guideline (CPG), but are not an exhaustive list. Many variables affect the successful translation of evidence into practice, and clinicians need to assess their own practice environment and clinical skills to determine the best approach to implement the action statements as individuals.

Strategies for implementation:

- Keep a copy of the vestibular rehabilitation CPG in a convenient clinic location.
- Seek training in the use of the recommended intervention approaches.
- Build relationships with referral sources to encourage early referral of persons with peripheral vestibular hypofunction.
- Measure outcomes of care using recommended outcome measures across the International Classification of Functioning, Disability and Health (ICF) domains.
- Share the *Journal of Neurologic Physical Therapy (JNPT)* Perspectives for Patients that accompanies this article with patients and others

who are interested in learning about the management of dizziness related to vestibular disorders.

Implementation Tools

Patient Resources

Slide Presentation

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Hall CD, Herdman SJ, Whitney SL, Cass SP, Clendaniel RA, Fife TD, Furman JM, Getchius TSD, Goebel JA, Shepard NT, Woodhouse SN. Vestibular rehabilitation for peripheral vestibular hypofunction: an evidence-based clinical practice guideline. J Neurol Phys Ther. 2016 Apr;40(2):124-55. [105 references] [PubMed](#)

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2016 Apr

Guideline Developer(s)

American Physical Therapy Association, Neurology Section - Medical Specialty Society

Source(s) of Funding

The American Physical Therapy Association (APTA) provided grant funding to support the development and preparation of this document.

Guideline Committee

Vestibular Guideline Workgroup and Advisory Board

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

All members of the workgroup and Advisory Board submitted written conflict-of-interest forms and CVs which were evaluated by a member of the Neurology Section Clinical Practice Director (Beth Crowner, PT, DPT, NCS, MPPA) and found to be free of financial and intellectual conflict of interest.

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the [Journal of Neurologic Physical Therapy Web site](#) .

Availability of Companion Documents

The following is available:

- Vestibular rehabilitation for peripheral vestibular hypofunction: clinical practice guideline and beyond! Slide presentation. Alexandria (VA): American Physical Therapy Association (APTA) Neurology Section; 2016 Feb 23. 13 p. Available from the [American Physical Therapy Association \(APTA\) Neurology Section Web site](#) .

A variety of courses on vestibular rehabilitation are available from the [APTA Neurology Section Web site](#) .

Patient Resources

The following is available:

- Treatment for vestibular disorders. How does your physical therapist treat dizziness related to vestibular problems? JNPT perspectives for patients. J Neurol Phys Ther. 2016 April;40(2):156. Available from the [Journal of Neurologic Physical Therapy Web site](#)

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

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